

# ***AGRICULTURE SCIENCE I AND II STANDARDS***



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Office of Career, Technical and Adult Education  
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The Office of Career, Technical and Adult Education is dedicated to developing innovative educational opportunities for students to acquire skills for productive employment and lifelong learning.

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### **BUSINESS AND INDUSTRY VALIDATION**

All CTE standards developed through the Nevada Department of Education are validated by business and industry through one or more of the following processes: (1) the standards are developed by a team consisting of business and industry representatives; or (2) a separate review panel was coordinated with industry experts to ensure the standards include the proper content; or (3) the adoption of nationally-recognized standards endorsed by business and industry.

The Agriculture Science standards were validated through the active participation by business and industry on the development team.

### **PROJECT COORDINATOR**

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# **AGRICULTURE AND NATURAL RESOURCES**

## **Program Requirements**

Occupations associated with agriculture production, natural resources, processing and distribution of food and fiber are important to the national interests and provide significant employment opportunities. Occupational education and training in agriculture and agri-business are essential to the continued economic health of Nevada and the nation, as it provides the needed competent and trained work force.

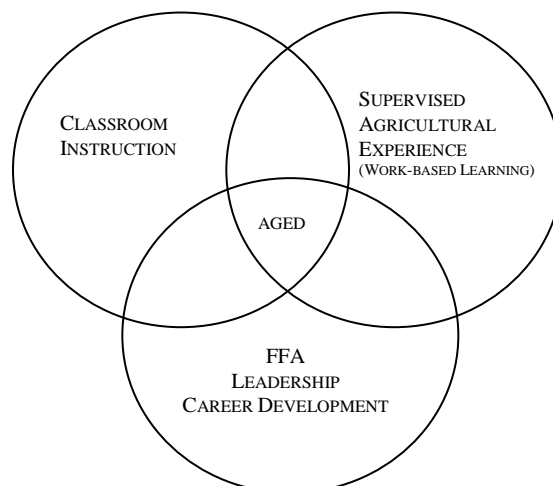
Agriculture education provides high school students with technical and specialized knowledge in production agriculture and natural resources as well as other specific agriculture occupations. The programs are designed to meet students' occupational objectives, interests, and abilities for entry into chosen occupations and can prepare them for advanced education and training. Agriculture education is a coordinated program of group and individual instructional activities consisting of classroom instruction, laboratory experiences, and leadership development. Integral to these activities are FFA (leadership development) and Supervised Agricultural Experience (work-based learning), Nevada Revised Statute 385.110. Federal/Public law#105-225 which was passed in August, 1998, states "Congress of the United States recognizes the importance of the FFA as an integral part of the program of Vocational Agriculture." All students enrolled in Agriculture Education will be recognized as members of the FFA organization. All secondary agriculture education programs and school districts will purchase a curriculum packet consisting of the New Horizons agriculture career and technical magazine, the FFA manual, and the Nevada Record Book on a yearly basis for every student enrolled in agriculture education in their program. Areas of study at the secondary level are divided into Agriculture Science and Specialized Advanced Agriculture Career and Technical Areas.

Agriculture and Society, Plant and Soil Science, Agriculture Mechanical Engineering and Technology, Animal Science, Leadership/FFA, Agriculture Business, Sales, Marketing and Supervised Agriculture Experience, Natural Resources, and Employability are included in the Agriculture Science introduction division.

Instruction in business/specialized agriculture provides training in specific occupational skills, duties, and tasks, as determined by the business and industry needs. Specialized career and technical agriculture programs will include, but are not limited to, the following: ornamental horticulture, floriculture design, turf and landscape management, equine science and technology, forestry technology, wildlife management and enforcement, food science and processing, feedlot management, animal science, veterinary science, agriculture power systems, natural resources and reclamation, mining science and operations, nursery and greenhouse management, landscape architecture, irrigation and chemical management, lawn care and maintenance, and agriculture construction

### **NEVADA AGRICULTURE EDUCATION**

Model of Instruction



## INTRODUCTION

The standards in this document are designed to clearly state what the student should know and be able to do upon completion of an advanced high school Agriculture Science program. These standards are designed for a three-credit course sequence that prepares the student for a technical assessment directly aligned to the standards.

These exit-level standards are designed for the student to complete all standards through their completion of a program of study. These standards are intended to guide curriculum objectives for a program of study.

The standards are organized as follows:

**Content Standards** are general statements that identify major areas of knowledge, understanding, and the skills students are expected to learn in key subject and career areas by the end of the program.

**Performance Standards** follow each content standard. Performance standards identify the more specific components of each content standard and define the expected abilities of students within each content standard.

**Performance Indicators** are very specific criteria statements for determining whether a student meets the performance standard. Performance indicators may also be used as learning outcomes, which teachers can identify as they plan their program learning objectives.

The crosswalk and alignment section of the document shows where the performance indicators support the English Language Arts and Mathematics Common Core State Standards, and the Nevada State Science Standards. Where correlation with an academic standard exists, students in the Agriculture Science program perform learning activities that support, either directly or indirectly, achievement of one or more Common Core State Standards.

All students are encouraged to participate in the career and technical student organization (CTSO) that relates to their program area. CTSOs are co-curricular national associations that directly enforce learning in the CTE classroom through curriculum resources, competitive events, and leadership development. CTSOs provide students the ability to apply academic and technical knowledge, develop communication and teamwork skills, and cultivate leadership skills to ensure college and career readiness.

The Employability Skills for Career Readiness identify the “soft skills” needed to be successful in all careers, and must be taught as an integrated component of all CTE course sequences. These standards are available in a separate document.

**CONTENT STANDARD 1.0 : EXAMINE THE ROLE OF AGRICULTURE IN SOCIETY**

**PERFORMANCE STANDARD 1.1 : RECOGNIZE THE ROLE OF AGRICULTURE IN SOCIETY**

- |       |  |
|-------|--|
| 1.1.1 | Assess how agriculture supports daily life                                       |
| 1.1.2 | Explain that agriculture is a science  |
| 1.1.3 | Describe how agricultural products are traded around the globe                   |
| 1.1.4 | Describe the various components of the agriculture industry                      |
| 1.1.5 | Discuss the role of modern agriculture in basic human nutrition                  |
| 1.1.6 | Identify agricultural products used to provide food, clothing, and human shelter |

**PERFORMANCE STANDARD 1.2 : UNDERSTAND THE HISTORY OF PRODUCTION AGRICULTURE**

- |       |   |
|-------|---|
| 1.2.1 | Compare agriculture's role in developing civilizations  |
| 1.2.2 | Organize the major technological developments that have occurred in agriculture                         |
| 1.2.3 | Interpret historical events and trends that have led to the development of today's agriculture industry |

**PERFORMANCE STANDARD 1.3 : EXPLORE THE WORLD FOOD SUPPLY**

- |       |  |
|-------|--|
| 1.3.1 | Analyze the impact of agriculture on the local, state, national, and world economies |
| 1.3.2 | Explain the role of government in the world's food supply                            |

## **CONTENT STANDARD 2.0 : DEVELOP LEADERSHIP AND COMMUNICATION SKILLS THROUGH PARTICIPATION IN FFA**

### **PERFORMANCE STANDARD 2.1 : UNDERSTAND THE HISTORY AND ORGANIZATION OF FFA**

- |       |  |
|-------|--|
| 2.1.1 | Summarize how, when, and why the National FFA Organization was founded   |
| 2.1.2 | Describe the mission and strategies, colors, motto, parts of the emblem, and organizational structure of the National FFA Organization |
| 2.1.3 | Recite and explain the meaning of the FFA Creed  |
| 2.1.4 | Explain the purpose of FFA's Program of Activities and describe its committee structure  |

### **PERFORMANCE STANDARD 2.2 : UNDERSTAND THE OPPORTUNITIES IN FFA**

- |       |  |
|-------|--|
| 2.2.1 | Describe how FFA develops leadership skills, personal growth, and career success |
| 2.2.2 | Identify major state and national activities and awards available to FFA members |
| 2.2.3 | Compete in at least one Career Development Event at the local level              |

### **PERFORMANCE STANDARD 2.3 : PROPERLY USE SKILLS IN PARLIAMENTARY PROCEDURE**

- |       |  |
|-------|--|
| 2.3.1 | List three reasons why parliamentary procedure is used in meetings |
| 2.3.2 | List five classifications of motions                               |
| 2.3.3 | Properly perform ten procedures of parliamentary law               |

### **PERFORMANCE STANDARD 2.4 : UNDERSTAND THE IMPORTANCE OF SCHOOL AND COMMUNITY AWARENESS**

- |       |  |
|-------|--|
| 2.4.1 | Discuss the meaning and importance of community service  |
| 2.4.2 | Identify and describe some community service organizations   |
| 2.4.3 | Explain how FFA members can become involved in community improvement and development, and plan an activity |



**CONTENT STANDARD 3.0 : DEVELOP A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) PROGRAM**

**PERFORMANCE STANDARD 3.1 : UNDERSTAND THE BENEFITS OF AN SAE PROGRAM**

- |       |  |
|-------|--|
| 3.1.1 | Relate the importance of goals and career ladders                  |
| 3.1.2 | Explore and develop supervised agricultural experience plans       |
| 3.1.3 | Prove the benefits of supervised agricultural experience programs  |
| 3.1.4 | Compare the difference between entrepreneurship and placement SAEs |
| 3.1.5 | Connect exploratory SAEs and research and experimentation SAEs     |

**PERFORMANCE STANDARD 3.2 : UNDERSTAND THE BENEFITS OF SAE RECORDS**

- |       |   |
|-------|---|
| 3.2.1 | Analyze the importance of keeping records of an SAE program                       |
| 3.2.2 | Investigate the types of financial records needed to support a chosen SAE program |
| 3.2.3 | Show the procedures for making entries in SAE records                             |
| 3.2.4 | Explain how to summarize and analyze SAE records                                  |

## **CONTENT STANDARD 4.0 : EXPLORING SCIENTIFIC INVESTIGATION IN AGRICULTURE**

### **PERFORMANCE STANDARD 4.1 : DESIGN AND CONDUCT AGRICULTURAL RESEARCH**

- |       |  |
|-------|--|
| 4.1.1 | List the steps of the scientific method  |
| 4.1.2 | Explain the steps in conducting research in agriculture, and conduct an appropriate research project |

### **PERFORMANCE STANDARD 4.2 : REPORT AGRICULTURAL RESEARCH**

- |       |   |
|-------|---|
| 4.2.1 | Organize the major parts of a research report                         |
| 4.2.2 | Construct the general guidelines for preparing a research report      |
| 4.2.3 | Explain how to include proper tables and figures in a research report |

### **PERFORMANCE STANDARD 4.3 : UNDERSTAND SCIENTIFIC MEASUREMENT**

- |       |   |
|-------|---|
| 4.3.1 | Describe the systems of measurement used in this country  |
| 4.3.2 | Determine the metric prefixes and units used for measuring length, volume weight, temperature, and area |
| 4.3.3 | Convert from one system of units to another system of units   |

### **PERFORMANCE STANDARD 4.4 : USE LABORATORY TOOLS AND EQUIPMENT**

- |       |   |
|-------|---|
| 4.4.1 | Identify and properly use personal protection equipment (PPE) |
| 4.4.2 | Describe safety in agriscience laboratories                   |
| 4.4.3 | Demonstrate proper use of common agriscience equipment        |
| 4.4.4 | Identify the major parts of a microscope                      |
| 4.4.5 | Show the proper use and care of a microscope                  |

### **PERFORMANCE STANDARD 4.5 : EXPLORE CAREERS IN AGRICULTURAL SCIENCE**

- |       |   |
|-------|---|
| 4.5.1 | Identify basic career information related to agricultural science |
| 4.5.2 | Name several agricultural science careers                         |

**CONTENT STANDARD 5.0 : DEVELOP AN UNDERSTANDING OF THE ANIMAL SCIENCE INDUSTRY**

**PERFORMANCE STANDARD 5.1 : EXPLORE AND EVALUATE THE LIVESTOCK INDUSTRY**

- |       |  |
|-------|--|
| 5.1.1 | Define terms used to describe beef cattle, dairy, sheep, swine, and horses and identify their external parts |
| 5.1.2 | Compare and contrast the common breeds of livestock  |
| 5.1.3 | Identify and describe methods used to select different species of livestock                                  |
| 5.1.4 | Evaluate livestock in a systematic, organized manner according to industry standards                         |

**PERFORMANCE STANDARD 5.2 : UNDERSTAND ANIMAL CELLULAR BIOLOGY**

- |       |  |
|-------|--|
| 5.2.1 | Explain a cell's role and compare and contrast the types of cells (prokaryotic and eukaryotic) |
| 5.2.2 | Analyze the components of an animal cell and explain their functions                           |
| 5.2.3 | Define cell theory and examine the importance of mitosis                                       |
| 5.2.4 | Identify and describe the five stages of mitosis   |
| 5.2.5 | Identify and describe the stages of meiosis I and II   |
| 5.2.6 | Analyze the role of meiosis in spermatogenesis and oogenesis                                   |
| 5.2.7 | Compare and contrast mitosis and meiosis   |

**PERFORMANCE STANDARD 5.3 : EXPLORE REPRODUCTIVE PHYSIOLOGY AND BREEDING SYSTEMS**

- |       |  |
|-------|--|
| 5.3.1 | Compare and explain common breeding systems used in livestock production |
| 5.3.2 | Compare gestation lengths in livestock species                           |
| 5.3.3 | Analyze the effects of DNA sequencing on crossbreeding                   |

**PERFORMANCE STANDARD 5.4 : UNDERSTAND ANIMAL NUTRITION**

- |       |   |
|-------|---|
| 5.4.1 | Identify the major parts and describe the functions of the digestive systems in livestock |
| 5.4.2 | Analyze the major nutrients and their importance to animals                               |

**PERFORMANCE STANDARD 5.5 : UNDERSTAND ANIMAL HEALTH MANAGEMENT**

- |       |   |
|-------|---|
| 5.5.1 | Measure animal health through visual and tangible observations                  |
| 5.5.2 | Identify the two categories of disease and determine the causes of each         |
| 5.5.3 | Recognize the two categories of immunity and compare the types in each category |
| 5.5.4 | Identify good animal health management practices                                |

**PERFORMANCE STANDARD 5.6 : EXPLORE ANIMAL WELFARE ISSUES**

- |       |  |
|-------|--|
| 5.6.1 | Compare and contrast animal rights and animal welfare                                  |
| 5.6.2 | Analyze the ethics involved in animal production                                       |
| 5.6.3 | Compare and contrast the role of companion animals and production livestock in society |

**PERFORMANCE STANDARD 5.7 : EXPLORE CAREERS IN ANIMAL SCIENCE**

- |       |   |
|-------|---|
| 5.7.1 | Identify basic career information related to animal science |
| 5.7.2 | Name several animal science careers                         |

**CONTENT STANDARD 6.0 : UNDERSTANDING PLANT SCIENCE**

**PERFORMANCE STANDARD 6.1 : IDENTIFY DIFFERENT PLANT CLASSIFICATION SYSTEMS**

- 6.1.1 State the classification and naming of plants
- 6.1.2 Distinguish the major groups of plants
- 6.1.3 Compare the classification of plants by life cycle

**PERFORMANCE STANDARD 6.2 : IDENTIFY PARTS AND FUNCTIONS OF PLANT CELLS**

- 6.2.1 Label the parts of a plant cell
- 6.2.2 Differentiate between a plant and animal cell
- 6.2.3 State the function of plant cell organelles

**PERFORMANCE STANDARD 6.3 : UNDERSTAND PLANT PHYSIOLOGY**

- 6.3.1 Analyze the process of photosynthesis
- 6.3.2 Formulate the process of cellular respiration
- 6.3.3 Describe plant growth processes
- 6.3.4 Summarize why photosynthesis and respiration are important to human beings

**PERFORMANCE STANDARD 6.4 : UNDERSTAND FLOWER ANATOMY**

- 6.4.1 Identify and describe the parts of a flower
- 6.4.2 Explain the purpose of a flower
- 6.4.3 List different types of flowers
- 6.4.4 Describe the difference between monocot and dicot flowers

**PERFORMANCE STANDARD 6.5 : UNDERSTAND PLANT PROPAGATION**

- 6.5.1 Explain the importance of plant propagation
- 6.5.2 Compare the difference between sexual and asexual propagation
- 6.5.3 Demonstrate asexual propagation

**PERFORMANCE STANDARD 6.6 : UNDERSTAND PLANT NUTRITION AND HEALTH**

- |       |   |
|-------|---|
| 6.6.1 | Differentiate between macronutrients and micronutrients                   |
| 6.6.2 | Describe pH and how it is modified  |
| 6.6.3 | Describe the components of a fertilizer                                   |
| 6.6.4 | Categorize the methods of safely applying agricultural chemicals to crops |
| 6.6.5 | Explain the role of agriculture chemicals in crop production              |

**PERFORMANCE STANDARD 6.7 : EXPLORE CAREERS IN PLANT SCIENCE**

- |       |  |
|-------|--|
| 6.7.1 | Identify basic career information related to plant science |
| 6.7.2 | Name several plant science careers                         |

**CONTENT STANDARD 7.0 : EXPLORING SOIL SCIENCE**

**PERFORMANCE STANDARD 7.1 : UNDERSTAND SOIL TEXTURE AND STRUCTURE**

- |       |   |
|-------|---|
| 7.1.1 | List the components of soil   |
| 7.1.2 | Describe the concept of soil texture and its importance                                     |
| 7.1.3 | Classify the texture of a soil sample   |
| 7.1.4 | Identify various soil structures, their formation, and importance in agriculture production |

**PERFORMANCE STANDARD 7.2 : UNDERSTAND SOIL EROSION**

- |       |  |
|-------|--|
| 7.2.1 | Define soil erosion and describe the two classes of erosion              |
| 7.2.2 | Identify the causes of soil erosion and the steps in the erosion process |

**PERFORMANCE STANDARD 7.3 : EXPLORE CAREERS IN SOIL SCIENCE**

- |       |   |
|-------|---|
| 7.3.1 | Identify basic career information related to soil science |
| 7.3.2 | Name several soil science careers                         |

**CONTENT STANDARD 8.0 : EXPLORING ORNAMENTAL HORTICULTURE****PERFORMANCE STANDARD 8.1 : UNDERSTAND THE BASIC PRINCIPLES OF LANDSCAPE DESIGN**

- |       |   |
|-------|---|
| 8.1.1 | Identify the major areas of a residential landscape         |
| 8.1.2 | Evaluate the selection of plant materials for the landscape |
| 8.1.3 | Demonstrate how to draw plants on a landscape plan          |
| 8.1.4 | Describe how to label a landscape plan                      |

**PERFORMANCE STANDARD 8.2 : UNDERSTAND THE BASIC PRINCIPLES OF GREENHOUSE MANAGEMENT**

- |       |  |
|-------|--|
| 8.2.1 | Classify greenhouse designs                        |
| 8.2.2 | Review considerations for greenhouse frameworks    |
| 8.2.3 | Identify and describe greenhouse glazing materials |
| 8.2.4 | Describe the functions of the headhouse            |
| 8.2.5 | List greenhouse bench options                      |

**PERFORMANCE STANDARD 8.3 : UNDERSTAND THE BASIC PRINCIPLES OF FLORICULTURE**

- |       |   |
|-------|---|
| 8.3.1 | Analyze the principles of floral design             |
| 8.3.2 | Compare the major forms used in floral design       |
| 8.3.3 | Demonstrate corsage design mechanics and techniques |
| 8.3.4 | Identify supplies and tools needed in floral work   |

**PERFORMANCE STANDARD 8.4 : EXPLORE CAREERS IN ORNAMENTAL HORTICULTURE**

- |       |  |
|-------|--|
| 8.4.1 | Identify basic career information related to ornamental horticulture science |
| 8.4.2 | Name several ornamental horticulture science careers                         |



**CONTENT STANDARD 9.0 : EXPLAIN BASIC SALES AND MARKETING CONCEPTS FOR AGRICULTURAL PRODUCTS**

**PERFORMANCE STANDARD 9.1 : DEMONSTRATE AN UNDERSTANDING OF AGRICULTURAL MARKETING**

- |       |   |
|-------|---|
| 9.1.1 | Distinguish between the four basic market structures  |
| 9.1.2 | Define marketing and the marketing mix  |
| 9.1.3 | Investigate the benefits of a brand, and explain how to establish and maintain a brand's reputation |
| 9.1.4 | Investigate the role of value-added products to an agricultural business                            |
| 9.1.5 | Define the purpose for developing a marketing plan  |

**PERFORMANCE STANDARD 9.2 : UNDERSTAND THE PRINCIPLES OF AGRICULTURAL SALES**

- |       |  |
|-------|--|
| 9.2.1 | Identify the characteristics of an effective salesperson, and define related terms                     |
| 9.2.2 | Compare and contrast the relationship between marketing and selling                                    |
| 9.2.3 | Compare the customer buying process  |
| 9.2.4 | Identify the six steps involved in the selling process   |
| 9.2.5 | Identify the benefits of different types of sales to an agribusiness, including Website and E-commerce |
| 9.2.6 | Assess the basic components and content of a business Website  |

**PERFORMANCE STANDARD 9.3 : EXPLORE CAREERS IN SALES AND MARKETING**

- |       |  |
|-------|--|
| 9.3.1 | Identify basic career information related to sales and marketing |
| 9.3.2 | Name several sales and marketing careers                         |

**CONTENT STANDARD 10.0 : UNDERSTAND THE RELATIONSHIP BETWEEN AGRICULTURE AND NATURAL RESOURCE MANAGEMENT**

**PERFORMANCE STANDARD 10.1 : EXPLORE TYPES OF NATURAL RESOURCES**

- |        |  |
|--------|--|
| 10.1.1 | Define and identify types of natural resources                         |
| 10.1.2 | Distinguish between renewable and nonrenewable resources               |
| 10.1.3 | Compare the difference between inexhaustible and exhaustible resources |

**PERFORMANCE STANDARD 10.2 : UNDERSTAND HUMAN DEMAND ON NATURAL RESOURCES**

- |        |  |
|--------|--|
| 10.2.1 | Recognize how humans use natural resources                   |
| 10.2.2 | Identify the urban and rural impacts of natural resource use |
| 10.2.3 | Analyze the impact of recycling and reusing resources        |

**PERFORMANCE STANDARD 10.3 : COMPREHEND NATURAL RESOURCE CONSERVATION**

- |        |  |
|--------|--|
| 10.3.1 | Critique the importance of conservation and preservation                           |
| 10.3.2 | Identify the effects of humans on the environment, including the greenhouse effect |
| 10.3.3 | Identify types of natural resource damage  |

**PERFORMANCE STANDARD 10.4 : UNDERSTAND ECOLOGY AND ECOSYSTEMS**

- |        |   |
|--------|---|
| 10.4.1 | Define ecology and ecosystems   |
| 10.4.2 | Explain natural selection and succession                              |
| 10.4.3 | Identify biomes and explain ecosystem diversity                       |
| 10.4.4 | Diagram and explain the nitrogen, phosphorus, carbon, and water cycle |

**PERFORMANCE STANDARD 10.5 : EXPLORE PRINCIPLES OF RANGELAND MANAGEMENT**

- 10.5.1 Define range
- 10.5.2 Define multiple use
- 10.5.3 Identify Nevada's bioregions
- 10.5.4 Explain effects of invasive species
- 10.5.5 Explain six rangeland management concepts

**PERFORMANCE STANDARD 10.6 : EXPLORE CAREERS IN NATURAL RESOURCE MANAGEMENT**

- 10.6.1 Identify basic career information related to natural resource management
- 10.6.2 Name several natural resource management careers

**CROSSWALK AND ALIGNMENTS OF  
AGRICULTURE SCIENCE I AND II STANDARDS  
AND THE COMMON CORE STATE STANDARDS,  
THE NEVADA SCIENCE STANDARDS,  
AND THE COMMON CAREER TECHNICAL CORE STANDARDS**

**CROSSWALK** (ACADEMIC STANDARDS)

The crosswalk of the Agriculture Science I and II Standards shows links to the Common Core State Standards for English Language Arts and Mathematics and the Nevada Science Standards. The crosswalk identifies the performance indicators in which the learning objectives in the Agriculture Science I and II program support academic learning. The performance indicators are grouped according to their content standard and are crosswalked to the English Language Arts and Mathematics Common Core State Standards and the Nevada Science Standards.

**ALIGNMENTS** (MATHEMATICAL PRACTICES)

In addition to correlation with the Common Core Mathematics Content Standards, many performance indicators support the Common Core Mathematical Practices. The following table illustrates the alignment of the Agriculture Science I and II Standards Performance Indicators and the Common Core Mathematical Practices. This alignment identifies the performance indicators in which the learning objectives in the Agriculture Science I and II program support academic learning.

**CROSSWALK** (COMMON CAREER TECHNICAL CORE)

The crosswalk of the Agriculture Science I and II Standards shows links to the Common Career Technical Core. The crosswalk identifies the performance indicators in which the learning objectives in the Agriculture Science I and II program support the Common Career Technical Core. The Common Career Technical Core defines what students should know and be able to do after completing instruction in a program of study. The Agriculture Science I and II Standards are crosswalked to the Agriculture, Food & Natural Resources Career Cluster™ and the multiple career pathways.

**CROSSWALK OF AGRICULTURE SCIENCE I AND II STANDARDS  
AND THE COMMON CORE STATE STANDARDS**

**CONTENT STANDARD 1.0: EXAMINE THE ROLE OF AGRICULTURE AND SOCIETY**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
1.1.2	<p><b><u>Science: Nature of Science</u></b>  N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways.  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.  N.12.B.4 Students know scientific knowledge builds on previous information.</p>
1.1.3	<p>N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways.  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.</p>
1.1.5	<p><b><u>Science: Life Science</u></b>  L.12.C.1 Students know relationships of organisms and their physical environment.</p>
1.1.6	<p><b><u>Science: Life Science</u></b>  L.12.C.1 Students know relationships of organisms and their physical environment.</p>
1.2.1	<p><b><u>Science: Nature of Science</u></b>  N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways.  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.  N.12.B.3 Students know the influence of ethics on scientific enterprise.  N.12.B.4 Students know scientific knowledge builds on previous information.</p>
1.2.2	<p><b><u>Science: Nature of Science</u></b>  N.12.B.4 Students know scientific knowledge builds on previous information.</p>
1.2.3	<p><b><u>Science: Nature of Science</u></b>  N.12.B.3 Students know the influence of ethics on scientific enterprise.  N.12.B.4 Students know scientific knowledge builds on previous information.  <b><u>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</u></b>  RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</p>
1.3.1	<p><b><u>Science: Nature of Science</u></b>  N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways.  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.</p>

**CONTENT STANDARD 2.0: DEVELOP LEADERSHIP AND COMMUNICATION SKILLS THROUGH PARTICIPATION IN FFA**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
2.1.3	<b><u>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</u></b> RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
2.2.1	<b><u>English Language Arts: Speaking and Listening</u></b> SL.9-10.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience and task.

**CONTENT STANDARD 3.0: DEVELOP A SUPERVISED AGRICULTURAL EXPERIENCE (SAE) PROGRAM**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
3.1.4	<p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>            WHST.9-10.2d Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.</p>
3.1.5	<p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>            WHST.9.10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>            WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>
3.2.1	<p><b><u>Science: Nature of Science</u></b>            N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.</p>
3.2.4	<p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>            WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p> <p><b><u>English Language Arts: Speaking and Listening Standards</u></b>            SL.9-10.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>SL.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.</p>

## CONTENT STANDARD 4.0: EXPLORING SCIENTIFIC INVESTIGATION IN AGRICULTURE

Performance Indicators	Common Core State Standards and Nevada Science Standards
4.1.2	<p><b><u>Science: Nature of Science</u></b></p> <p>N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.</p> <p>N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.</p> <p>N.12.A.3 Students know repeated experimentation allows for statistical analysis and unbiased conclusions.</p> <p>N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.</p> <p>N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships.</p> <p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p>
4.2.1	<p><b><u>Science: Nature of Science</u></b></p> <p>N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.</p> <p>N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.</p> <p>N.12.A.3 Students know repeated experimentation allows for statistical analysis and unbiased conclusions.</p> <p>N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships.</p> <p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p> <p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b></p> <p>WHST.9-10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>



4.2.2	<p><b><u>Science: Nature of Science</u></b>  N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.</p> <p>N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.</p> <p>N.12.A.3 Students know repeated experimentation allows for statistical analysis and unbiased conclusions.</p> <p>N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships.</p> <p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p> <p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>  WHST.9-10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>
4.2.3	<p><b><u>English Language Arts: Speaking and Listening Standards</u></b>  SL.11-12.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.</p> <p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>  WHST.9-10.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.</p> <p>WHST.9-10.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.</p>
4.4.1	<p><b><u>Science: Nature of Science</u></b>  N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.</p>
4.4.2	<p><b><u>Science: Nature of Science</u></b>  N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.</p> <p><b><u>English Language Arts: Speaking and Listening Standards</u></b>  SL.9-10.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p>
4.4.5	<p><b><u>Science: Nature of Science</u></b>  N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology.</p>

**CONTENT STANDARD 5.0: DEVELOP AN UNDERSTANDING OF THE ANIMAL SCIENCE INDUSTRY**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
5.1.2	<b><u>Science: Life Science</u></b> L.12.A.5 Students know how to predict patterns of inheritance. <b><u>Science: Life Science</u></b> L.12.D.1 Students know organisms can be classified based on evolutionary relationships.
5.1.3	<b><u>Science: Life Science</u></b> L.12.C.1 Students know relationships of organisms and their physical environment.
5.1.4	<b><u>Science: Nature of Science</u></b> N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.
5.2.1	<b><u>Science: Life Science</u></b> L.12.B.1 Students know cell structures and their functions.
5.2.2	<b><u>Science: Life Science</u></b> L.12.B.1 Students know cell structures and their functions. L.12.B.2 Students know the human body has a specialized anatomy and physiology composed of an hierarchical arrangement of differentiated cells.
5.2.5	<b><u>Science: Life Science</u></b> L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions
5.2.6	<b><u>Science: Life Science</u></b> L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions
5.3.1	<b><u>Science: Life Science</u></b> L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule. L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions. L.12.A.5 Students know how to predict patterns of inheritance.
5.3.2	<b><u>Science: Life Science</u></b> L.12.A.4 Students know several causes and effects of somatic versus sex cell mutations. L.12.A.5 Students know how to predict patterns of inheritance. L.12.B.1 Students know cell structures and their functions.
5.4.2	<b><u>Science: Life Science</u></b> L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.
5.5.1	<b><u>Science: Life Science</u></b> L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.
5.5.2	<b><u>Science: Life Science</u></b> L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.
5.5.3	<b><u>Science: Life Science</u></b> L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism.

CONTENT STANDARD 6.0: UNDERSTANDING PLANT SCIENCE

Performance Indicators	Common Core State Standards and Nevada Science Standards
6.1.1	<p><b><u>Science: Life Science</u></b>  L.12.D.1 Students know organisms can be classified based on evolutionary relationships.</p> <p><b><u>Science: Nature of Science</u></b>  N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p> <p>N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways.</p>
6.1.2	<p><b><u>Science: Nature of Science</u></b>  N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.</p> <p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p> <p><b><u>Science: Life Science</u></b>  L.12.D.1 Students know organisms can be classified based on evolutionary relationships.</p>
6.1.3	<p><b><u>Science: Nature of Science</u></b>  N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations.</p> <p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets.</p> <p><b><u>Science: Life Science</u></b>  L.12.C.1 Students know relationships of organisms and their physical environment.</p>
6.2.1	<p><b><u>Science: Life Science</u></b>  L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions.</p> <p>L.12.B.1 Students know cell structures and their functions.</p>
6.2.2	<p><b><u>Science: Life Science</u></b>  L.12.B.1 Students know cell structures and their functions.</p>
6.2.3	<p><b><u>Science: Life Science</u></b>  L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule.</p> <p>L.12.A.2 Students know DNA molecules provide instructions for assembling protein molecules.</p> <p>L.12.A.5 Students know how to predict patterns of inheritance.</p> <p>L.12.B.1 Students know cell structures and their functions.</p>
6.3.1	<p><b><u>Science: Earth Science</u></b>  E.12.A.1 Students know the Sun is the major source of Earth's energy, and provides the energy driving Earth's weather and climate.</p> <p><b><u>Science: Physical Science</u></b>  P.12.A.5 Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation).</p> <p>P.12.A.6 Students know chemical reactions either release or absorb energy.</p> <p>P.12.C.2 Students know energy forms can be converted</p> <p><b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>  WHST.9-10.9 Draw evidence from informational texts to support analysis, reflection, and research.</p>

6.3.2	<b><u>Science: Physical Science</u></b>
	P.12.A.5 Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation).
	P.12.A.6 Students know chemical reactions either release or absorb energy.
	<b><u>Science: Life Science</u></b>
	L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.
6.4.3	<b><u>Science: Life Science</u></b>
	L.12.D.1 Students know organisms can be classified based on evolutionary relationships.
6.4.4	<b><u>Science: Life Science</u></b>
	L.12.D.1 Students know organisms can be classified based on evolutionary relationships.
6.5.1	<b><u>Science: Life Science</u></b>
	L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule.
	L.12.D.6 Students know the concepts of natural and artificial selection.
6.5.2	<b><u>Science: Life Science</u></b>
	L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule.
	L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions.
	L.12.A.5 Students know how to predict patterns of inheritance.
6.5.3	<b><u>Science: Life Science</u></b>
	L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule.
	L.12.D.6 Students know the concepts of natural and artificial selection.
6.6.1	<b><u>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</u></b>
	RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
6.6.2	<b><u>English Language Arts: Reading Standards for Literacy in Science and Technical Subjects</u></b>
	RST.9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
6.6.3	<b><u>Science: Earth Science</u></b>
	E.12.C.3 Students know elements exist in fixed amounts and move through solid earth, oceans, atmosphere and living things as part of biogeochemical cycles.
	E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and non-renewable resources.
	E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.

**CONTENT STANDARD 7.0: EXPLORING SOIL SCIENCE**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
7.1.1	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.
7.1.2	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.
7.1.3	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.
7.1.4	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.
7.2.1	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.
7.2.2	<b><u>Science: Earth Science</u></b> E.12.C.5 Students know soil, derived from weathered rocks and decomposed organic material, is found in layers.

**CONTENT STANDARD 8.0: EXPLORING ORNAMENTAL HORTICULTURE**

Performance Indicators	Common Core State Standards and Nevada Science Standards
8.1.2	<b><u>Science: Life Science</u></b> L.12.C.1 Students know relationships of organisms and their physical environment.
8.1.3	<b><u>Science: Nature of Science</u></b> N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations.

**CONTENT STANDARD 9.0: EXPLAIN BASIC SALES AND MARKETING CONCEPTS FOR AGRICULTURAL PRODUCTS**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
9.1.3	<b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b> WHST.9-10.9 Draw evidence from informational texts to support analysis, reflection, and research.
9.1.4	<b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b> WHST.9-10.9 Draw evidence from informational texts to support analysis, reflection, and research.

**CONTENT STANDARD 10.0: UNDERSTAND THE RELATIONSHIP BETWEEN AGRICULTURE AND  
NATURAL RESOURCE MANAGEMENT**

<b>Performance Indicators</b>	<b>Common Core State Standards and Nevada Science Standards</b>
10.1.2	<p><b><u>Science: Earth Science</u></b>  E.12.A.1 Students know the Sun is the major source of Earth's energy, and provides the energy driving Earth's weather and climate.  E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and non-renewable resources.</p>
10.1.3	<p><b><u>Science: Life Science</u></b>  L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.  <b><u>Science: Earth Science</u></b>  E.12.A.1 Students know the Sun is the major source of Earth's energy, and provides the energy driving Earth's weather and climate.  E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and non-renewable resources.</p>
10.2.2	<p><b><u>Science: Life Science</u></b>  L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.  <b><u>Science: Nature of Science</u></b>  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.</p>
10.2.3	<p><b><u>Science: Life Science</u></b>  L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.  <b><u>Science: Nature of Science</u></b>  N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts.  <b><u>Science: Earth Science</u></b>  E.12.C.4 Students know processes of obtaining, using, and recycling of renewable and non-renewable resources.  <b><u>English Language Arts: Writing Standards for Literacy in Science and Technical Subjects</u></b>  WHST.9-10.9 Draw evidence from informational texts to support analysis, reflection, and research.</p>
10.3.1	<p><b><u>Science: Life Science</u></b>  L.12.D.4 Students know the extinction of species can be a natural process.</p>
10.3.2	<p><b><u>Science: Earth Science</u></b>  E.12.A.2 Students know the composition of Earth's atmosphere has changed in the past and is changing today.  E.12.A.3 Students understand the role of the atmosphere in Earth's greenhouse effect.</p>
10.3.3	<p><b><u>Science: Life Science</u></b>  L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.</p>
10.4.1	<p><b><u>Science: Life Science</u></b>  L.12.C.1 Students know relationships of organisms and their physical environment.  <b><u>Science: Earth Science</u></b>  E.12.A.2 Students know the composition of Earth's atmosphere has changed in the past and is changing today.</p>



10.4.2	<p><b><u>Science: Life Science</u></b></p> <p>L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability.</p> <p>L.12.D.3 Students know the fossil record gives evidence for natural selection and its evolutionary consequences.</p> <p>L.12.D.6 Students know the concepts of natural and artificial selection.</p>
10.4.3	<p><b><u>Science: Life Science</u></b></p> <p>L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials.</p> <p>L.12.C.4 Students know the unique geologic, hydrologic, climatic, and biological characteristics of Nevada's bioregions.</p> <p>L.12.D.5 Students know biological evolution explains diversity of life.</p>
10.5.4	<p><b><u>Science: Life Science</u></b></p> <p>L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability.</p>

**ALIGNMENT OF AGRICULTURE SCIENCE STANDARDS  
AND THE COMMON CORE MATHEMATICAL PRACTICES**

<b>Common Core Mathematical Practices</b>	<b>Agriculture Science I and II Performance Indicators</b>
1. Make sense of problems and persevere in solving them.	
2. Reason abstractly and quantitatively.	4.3.2, 4.3.3 13.2.3
3. Construct viable arguments and critique the reasoning of others.	2.3.3
4. Model with mathematics.	3.2.3, 3.2.4 4.3.3 6.3.1, 6.3.2
5. Use appropriate tools strategically.	3.2.2, 3.2.3 4.2.3 8.1.2, 8.1.3
6. Attend to precision.	3.2.3, 3.2.4 4.2.3; 4.3.3
7. Look for and make use of structure.	3.2.4 4.3.2 6.3.1, 6.3.2
8. Look for and express regularity in repeated reasoning.	

**CROSSWALKS OF AGRICULTURE SCIENCE I AND II STANDARDS  
AND THE COMMON CAREER TECHNICAL CORE**

<b>Agriculture, Food &amp; Natural Resources Career Cluster™ (AG)</b>	<b>Performance Indicators</b>
1. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster™.	1.1.3, 1.2.2, 1.2.3 1.3.1, 1.3.2; 4.1.2
2. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food and natural resources (AFNR) in society and the economy.	1.1.1-1.1.6 2.4.1-2.4.3
3. Examine and summarize the importance of health, safety and environmental management systems in AFNR businesses.	1.1.1, 1.1.5, 1.1.6, 1.3.2 4.4.1, 4.4.2
4. Demonstrate stewardship of natural resources in AFNR activities.	10.2.1-10.2.3, 10.5.4
5. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.	2.2.3; 3.1.1, 3.1.3-3.1.5 4.5.1; 5.7.1; 6.7.1 7.3.1; 8.4.1; 9.3.1; 10.6.1
6. Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.	3.2.4 10.3.1-10.3.3, 10.5.2
<b>Agribusiness Systems Career Pathway (AG-BIZ)</b>	<b>Performance Indicators</b>
1. Apply management planning principles in AFNR businesses.	
2. Use record keeping to accomplish AFNR business objectives, manage budgets, and comply with laws and regulations.	
3. Manage cash budgets, credit budgets and credit for an AFNR business using generally accepted accounting principles.	3.2.2-3.2.4
4. Develop a business plan for an AFNR business.	
5. Use sales and marketing principles to accomplish AFNR business objectives.	9.1.4, 9.2.1-9.2.6
<b>Animal Systems Career Pathway (AG-ANI)</b>	<b>Performance Indicators</b>
1. Analyze historic and current trends impacting the animal systems industry.	5.6.1-5.6.3
2. Utilize best-practice protocols based upon animal behaviors for animal husbandry and welfare.	
3. Design and provide proper animal nutrition to achieve desired outcomes for performance, development, reproduction and/or economic production.	5.4.2
4. Apply principles of animal reproduction to achieve desired outcomes for performance, development and/or economic production.	5.3.1-5.3.3
5. Evaluate environmental factors affecting animal performance and implement procedures for enhancing performance and animal health.	
6. Classify, evaluate and select animals based on anatomical and physiological characteristics.	5.1.3, 5.1.4, 5.5.1, 5.5.4
7. Apply principles of effective animal health care.	

Natural Resources Systems Career Pathway (AG-NR)	Performance Indicators
1. Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals.	10.5.2
2. Analyze the interrelationships between natural resources and humans.	10.2.1-10.2.3 10.3.2, 10.3.3
3. Develop plans to ensure sustainable production and processing of natural resources.	
4. Demonstrate responsible management procedures and techniques to protect or maintain natural resources.	10.5.5
Plant Systems Career Pathway (AG-PL)	Performance Indicators
1. Develop and implement a crop management plan for a given production goal that accounts for environmental factors.	6.6.5
2. Apply the principles of classification, plant anatomy and plant physiology to plant production and management.	6.1.1-6.1.3, 6.2.1-6.2.3 6.3.1-6.3.4, 6.4.1-6.4.4
3. Propagate, culture and harvest plants and plant products based on current industry standards.	6.5.1-6.5.3, 6.6.1-6.6.5
4. Apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape and farm).	8.1.1, 8.3.1, 8.3.2